



Forest Health Protection Pacific Southwest Region



Date: September 14, 2011

File Code: 3420

To: District Ranger, Hayfork Ranger District, Shasta-Trinity National Forest

Subject: Evaluation of bark beetle activity in the Westside Plantations Thinning Project (FHP Report N11-11)

At the request of Phil Eisenhauer, District Silviculturist, a field evaluation of the Westside Plantations Thinning Project was conducted on June 20, 2011. The objectives were to assess the current stand conditions, evaluate the project for potential funding through the Forest Health Protection (FHP) Western Bark Beetle Initiative. Phil Eisenhauer (S-T), Cynthia Snyder (FHP) and Pete Angwin (FHP) were present.

Background

The Westside Plantations Thinning Project involves thinning and fuels reduction

treatments on 25,720 acres of overly dense plantations on National Forest System lands on the Trinity portion (west of Interstate 5) of the Shasta-Trinity National Forest over a 10-year period. Approximately 97,000 acres of plantations have been created in the greater 900,000 acre area since 1970. Plantations were established following clearcuts (approximately 75,000 acres) and wildfires (approximately 820,000 acres). The clearcuts and suitable timberlands within the fires were typically planted with either ponderosa pine or Douglas-fir.

The greater project area is in portions of T. 1-7 N., R. 5-8 E.; T. 1-2 S., R. 6-8 E., HBM and T. 27-39 N., R. 5-12 W., MBM in Trinity, Humboldt, Tehama and Shasta Counties. The vicinity map (figure 1) shows the location of the project area in relationship to the Forest boundary,

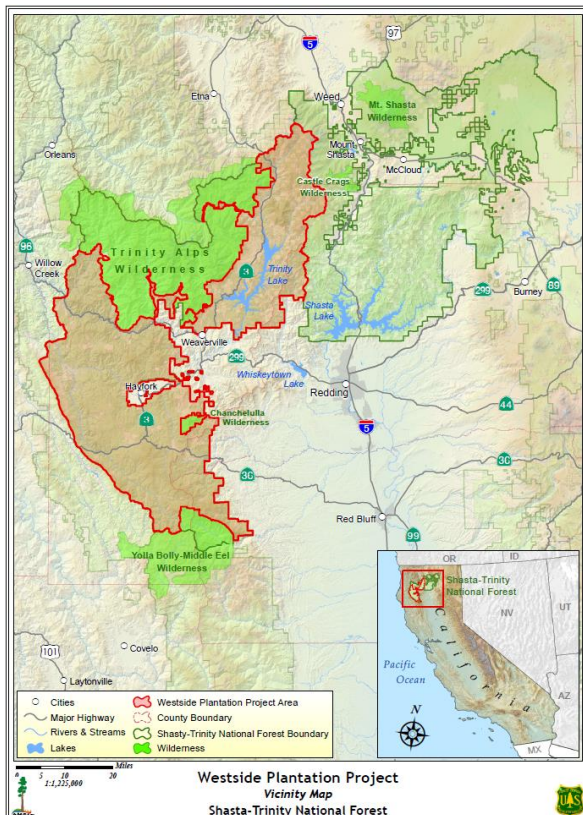


Figure 1. Map of project location with boundaries outlined in red.

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wilderness areas and nearby communities. The project consists of over 2,000 plantation units dispersed over the project area.

Approximately 93% of these plantations are dispersed in Trinity County outside of designated wilderness and inventoried roadless areas. The plantations proposed for treatment range in age from 21 to 55 years. The majority of the plantations are overly dense (300 to 1,500 trees per acre). Tree growth has slowed and these stands are considered at risk to various insect and disease agents. Portions of the plantations may be within Late-Successional Reserves, Administratively Withdrawn Areas, Riparian Reserves, Adaptive Management Areas, Wildland-Urban Interface and Matrix.

The proposed action is to thin 2,200 pine and mixed-conifer plantations (21-55 years old) varying in size from less than 1 to 187 acres in size. Approximately 12,520 acres have the potential of being thinned with commercial value (i.e., sawlogs, fuelwood, biomass) and 13,200 acres would be precommercially thinned.

Thinning would include treatment of non-commercial and commercial-valued conifers and other competing vegetation by hand or mechanical treatment methods. The cut material would be further treated as needed to meet fuels objectives by lopping and scattering, masticating, crushing, piling and burning and/or chipping. Under the proposed action, treatment prescriptions would generally include thinning from below with variable spacing. Site-specific treatment prescriptions would differ in plantations based on Forest Plan management prescriptions.

In general, the thinning activities would thin from below retaining a range of 60 to 200 trees per acre. Approximately 55 to 80 percent of the total competing vegetation would be removed. The number of trees per acre remaining, post-project, would vary depending on the Forest Plan management prescription in which the unit is located, but generally pine dominated stands would average 100 trees per acre (general average spacing of 21 feet by 21 feet) and mixed conifer stands treatment units would average 135 trees per acre (general average spacing of 18 feet by 18 feet). In all stands where the average residual

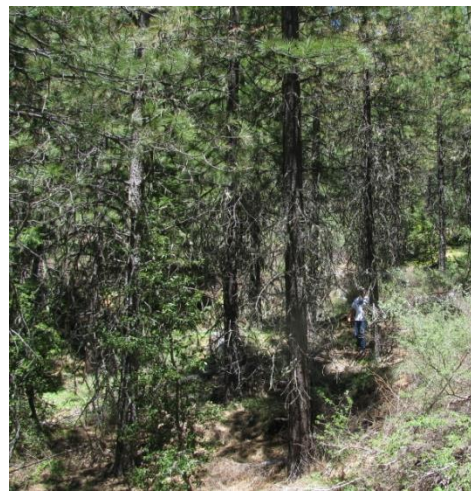


Figure 2. Overstocked ponderosa pine plantation proposed for thinning as part of the Westside Plantations Thinning Project.

diameter would be greater than 12 inches DBH, typically in plantations older than 40 years, the average trees per acre would be less than 100.

The silvicultural prescription for treatment units would be to thin with the following priority of tree retention:

- The largest, oldest and/or legacy trees would not be removed unless they pose a safety threat.
- All sugar pine (*Pinus lambertiana*) not infected with blister rust would be retained, except where it is not possible to attain desired residual stocking levels.
- All healthy dominant and co-dominant hardwood species would be retained and would count in spacing criteria. When hardwoods have multiple stems, retain the dominant two to three stems.

In addition, for those units that are outside of Late-Successional and Riparian Reserves, the following applies:

- Retain the tallest trees and those trees with the largest crowns and straightest boles that are free of damage from insects, disease and physical or mechanical causes.
- Retain (in order of priority) non blister rust-infected sugar pine and Douglas-fir (*Pseudotsuga menziesii*), followed by ponderosa (*Pinus ponderosa*)/Jeffrey pine (*Pinus jeffreyi*), incense cedar (*Calocedrus decurrens*) and white fir (*Abies concolor*) while also encouraging species diversity.
- Variable spacing would be encouraged for the development of historic vegetative conditions and quality wildlife habitat.

Observations

What was observed were primarily single-storied, young pine and mixed conifer (ponderosa pine and Douglas-fir with some sugar pine, incense cedar and white fir ingrowth) stands that are the result of site prepared and planted units that were reforested primarily in the 1970s and 1980s. These plantations are now in overstocked condition

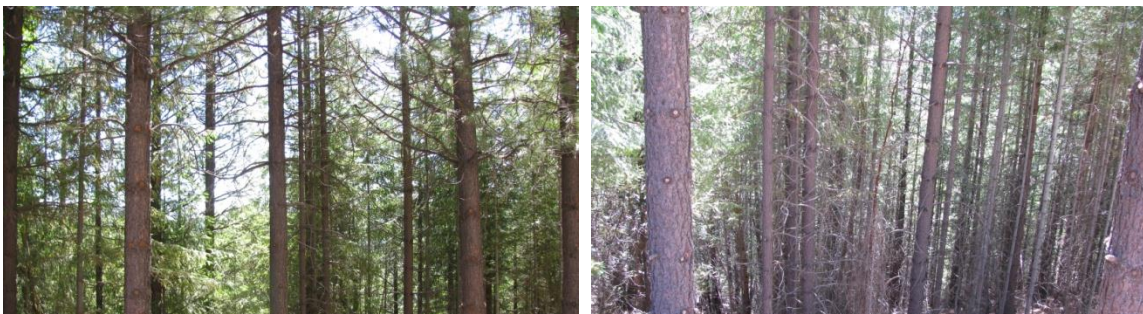


Figure 3a and 3b. Overly dense ponderosa pine plantations exhibiting reduced growth and crown characteristics. These stands are currently free of insect and disease problems, but that may only be due increased water availability over the past two water years.

with over 400 trees per acre, but tend to be currently free of serious insect and disease impacts (Figures 3a and 3b). These were in close proximity to other multi-aged, multi-storied mature mixed conifer stands which may have had some previous partial removal harvest activities. These mature stands are exhibiting increasing decadence and light mortality due to a number of biological agents including western pine beetle in ponderosa pine and flatheaded fir borer in Douglas-fir and white fir. Plantation stands are in an overstocked, high hazard condition in terms of their susceptibility to future successful bark beetle attacks (SDI approximately 200-400). Growth is slow and percent live crown is decreasing indicating low tree vigor.

Discussion

The Westside Plantations Thinning Project area has experienced relatively modest tree mortality despite overstocked stand conditions. This can be partially attributed to species diversity in some stands as well as increased water availability over the past two years. However, it is very likely that western pine beetle pressure will increase within these stands resulting in increasing levels of pine mortality.

The plantations are fully- to overstocked with ponderosa pine, Douglas-fir, sugar pine, incense cedar and hardwoods with substantial ingrowth of white fir. There is currently an opportunity to significantly reduce the amount of susceptible pine within the stand, reduce overall stand density to a sustainable level, increase species diversity and meet other management objectives such as maintaining the oak component for wildlife and preserving the larger ponderosa pine.

In general, pine stands should be thinned to 80-100 sq.ft./acre to reduce their susceptibility to bark beetle attacks over the next twenty years. Currently, Northern California is experiencing higher than normal precipitation including snowpack levels. This has had a dramatic effect of reducing bark beetle mortality in stands with endemic western pine beetle populations. Without project implementation, there exists a high probability that these stands will once be significantly impacted by western pine beetle caused tree mortality when drought conditions resume in Northern California.

If you have any questions regarding this report and/or need additional information, please contact Cynthia Snyder at 530-226-2437 or Pete Angwin at 530-226-2436.

/s/ Cynthia Snyder

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